REMARKS

This paper is submitted in response to the Office Action dated April 12, 2006 (the "Office Action").

Claims 1-117 were previously pending in the application.

No claims have been canceled in this paper.

New claim 118 and 119 have been added in this paper.

Accordingly, claims 1-119 are currently pending.

Claims 1-7, 14, 16, 17, 29-35, 42, 44, 45, 57-63, 70, 72, 73, 85-91, 98, 100, 101, and 114-117 stand rejected.

Claims 8-13, 15, 18-28, 36-41, 43, 46-56, 64-69, 71, 74-84, 92-97, 99, and 102-112 are under objection.

Claim 113 has been allowed.

Claim 117 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 1-3, 29-31, 57-59, 85-87, and 114-116 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,430,150 issued to Azuma et al. ("*Azuma*"). Claims 4-7, 14, 16, 17, 32-35, 42, 44, 45, 60-63, 70, 72, 73, 88-91, 98, 100, and 101 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Azuma* in view of U.S. Patent No. 6,728,205 issued to Finn et al. ("*Finn*").

Applicant offers that the pending claims are allowable in view of the remarks presented herein. While not conceding that the cited references qualify as prior art, Applicant has chosen

to address the claim rejections as set forth below. The following arguments are made without prejudice to Applicant's right to establish, for example in a continuing application, that the cited references do not qualify as prior art with respect to a currently or subsequently claimed aspect of the invention. Applicant offers that the claims are allowable at least for the reasons presented below.

Allowable Subject Matter

Applicant expresses continued gratitude for the indication that claim 113 is allowed and that claims 8-13, 15, 18-28, 36-41, 43, 46-56, 64-69, 71, 74-84, 92-97, 99, and 102-112 would be allowable if rewritten in independent form including all of the limitations of the respective base claims and any intervening claims. Applicant wishes to maintain claims 8-13, 15, 18-28, 36-41, 43, 46-56, 64-69, 71, 74-84, 92-97, 99, and 102-112 in dependent form in view of the following remarks on the allowability of the corresponding base claims.

Rejections under § 112, first paragraph

Claim 117 stands rejected under § 112, first paragraph, as failing to comply with the written description requirement. The Office Action objects to the claim language of "said resources comprise an available class of service" as not being supported by the Specification as originally filed.

Applicant respectfully submits that the claim language is supported in the Specification as originally filed. For example, the discussion on p. 6, lines 1-10 describes the assignment of a Class of Service ("CoS)" level to a virtual path. In FIG. 3, blocks 350, 355, and 3260, and on p. 9, lines 17-21, the Specification describes the testing of parameters such as Class of Service,

origin, and target or bandwidth fields to determine if a negative acknowledgment of "NO RESOURCES" should be returned, or whether processing should continue.

In view of these portions of the disclosure (among others), Applicant respectfully submits that claim 117 is supported by the specification under § 112, first paragraph. Accordingly, Applicant respectfully requests that the rejection under § 112, first paragraph be withdrawn.

Rejections under § 102(e)

Claims 1-3, 29-31, 57-59, 85-87, and 114-116 stand rejected under § 102(e) as being anticipated by *Azuma*. Applicant respectfully traverses.

The cited portions of *Azuma* fail to disclose each of the limitations of the pending claims. For example, as previously argued in Applicant's amendment dated February 10, 2006 with respect to independent claim 1, **the cited portions of *Azuma* do not teach or suggest the limitation of identifying nodes with resources that are necessary to support a virtual path**. In response to Applicant's previous arguments, the present Office Action states that

> *Azuma* discloses determining alternate physical paths by using the physical and logical topology information that have identified the plurality of nodes with resources. **It is clear that Azuma identifies nodes with resources as a result of computation for finding alternate paths to restore failed path.**

(Office Action at 7.)

With regard to this limitation, the Office Action cites from the following passage of *Azuma*.

In response to the determination by the failure type determining part 12, the alternate path computing part 14 computes topology information to find alternate paths by referring to the physical topology information and the logical topology information. The computation is done using an algorithm such as Dijkstra's algorithm. On the basis of the result of computation, the alternate path cross-connecting part 16 issues an instruction for cross-connection to a cross-connect switch SW in the node so as to execute the actual cross-connection. After the node executes the cross-connection process, the cross-connection confirming parts 18 in the nodes work in cooperation so as to confirm whether or not the alternate paths set can operate properly.

(*Azuma* at 8:13-26.)

Three factors are disclosed in *Azuma* for finding alternate paths. These three factors are:

(a) **physical topology information,**

(b) **logical topology information, and**

(c) **a selection algorithm such as Dijkstra's algorithm.**

However, none of these factors in *Azuma* considers the resources available to a node in order to support the requirements of a virtual path. The *Azuma* factors relate only to the topology of a network, and do not describe an evaluation of the nodes being considered for use in a virtual path's restoration.

In particular, Dijkstra's algorithm addresses only the topology of a network. This algorithm addresses the single-source shortest path problem for a directed graph with nonnegative edge weights. For example, if the vertices of the graph represent cities and edge weights represent driving distances between pairs of cities connected by a direct road, Dijkstra's algorithm can be used to find the shortest route between two cities. However, Dijkstra's

algorithm assumes that nodes in a graph are adequate nodes for solving the single-source shortest path problem. **Dijkstra's algorithm does not include a preliminary analysis to test whether nodes in a graph have resource necessary to support a path**. If such a capability were needed by a particular system, that system would need to employ techniques other than Dijkstra's algorithm in order to provide such capability. Additional procedures would be needed to evaluate parameters (such as available bandwidth or available Class of Service level or others) to see if the nodes selected by Dijkstra's algorithm would meet such requirements. (Or alternatively, additional procedures would be needed to select the nodes provided as input to Dijkstra's algorithm in order to guarantee that the results meet such requirements.) Thus, Dijkstra's algorithm does not by itself present the limitation of identifying a plurality of nodes with resources that are necessary to support a virtual path.

Indeed, none of the three factors listed above from *Azuma* involve a determination whether a particular node would be appropriate for use in restoring a virtual path by virtue of having sufficient resources to support the virtual path. In particular, they do not teach identifying nodes with resources that are necessary to support a virtual path. For at least this reason, Applicant respectfully submits that independent claim 1 and all claims dependent therefrom are allowable under § 102(e). At least for similar reasons, independent claims 29, 57, and 85 and all claims dependent therefrom are also allowable under § 102(e).

Rejections under § 103(a)

Claims 4-7, 14, 16, 17, 32-35, 42, 44, 45, 60-63, 70, 72, 73, 88-91, 98, 100, and 101 stand rejected under § 103(a) as being unpatentable over *Azuma* in view of *Finn*. As a motivation for the proposed combination of references, the Office Action proposes that:

> It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Azuma to be used in optical network of Finn. The motivation is to get the benefit of high-speed network communications through fiber optic cables so that a prompt restoration is achieved through high-speed fiber-optic communications.

(Office Action at 5.)

Applicant respectfully submits that *Azuma* by itself is a self-contained reference that teaches the features cited by the Examiner. *Azuma* discusses networks that use high-speed communications. (*Azuma* at 1:11-14.) *Azuma* discusses technology related to restoration of computer networks. (*Id.* at Abstract.) *Azuma* discusses the use of optical signals in networks and the detection of failures in optical links. (*Id.* at 9:21-23.) *Azuma* discusses the use of alternate paths following failures in optical links. (*Id.* at 10:10-14.) Thus, a person having skill in the art would not be motivated to look beyond *Azuma* (and, in particular, would not need to look beyond *Azuma* to *Finn*) in order "to get the benefit of high-speed network communications through fiber optic cables so that a prompt restoration is achieved through high-speed fiber optic communications," as suggested by the Examiner.

Applicant also sees no other reason to make the combination proposed in the Office Action. The Office Action has thus failed to make a prima facie case for obviousness in the rejection of claims 4-7, 14, 16, 17, 32-35, 42, 44, 45, 60-63, 70, 72, 73, 88-91, 98, 100, and 101. Accordingly, Applicant respectfully requests that the rejections of these claims under § 103(a) be withdrawn.

Additionally, the proposed combination of *Azuma* and *Finn* would not lead to a meaningful device, system, or method. Applicant does not see an approach that would allow for

a productive combination of the technologies in these references. As discussed below, the systems taught in *Azuma* and in *Finn* do not work in ways that can be combined with each another.

Azuma is related to networks that use cross-connect units at telecommunications nodes, and to automatic restoration in a telecommunications network. (*Azuma* at 1:7-10.) *Azuma* describes a system with a failure type determining part 12 and an alternate path computing part 14. (*Id.* at 8:14-18.) These components of the *Azuma* system may be seen, for example, in FIG. 6 of *Azuma*. "The failure type determining part 12 determines the location and type of the failure by referring to the information included in the alarm message, the physical topology information and the logical topology information." (*Id.* at 7:65—8:1.) "In response to the determination by the failure type determining part 12, the alternate path computing part 14 computes topology information to find alternate paths by referring to the physical topology information and the logical topology information." (*Id.*) The alternate paths in *Azuma* are therefore computed after a failure has been detected.

In contrast, *Finn* provides approaches for pre-planning or pre-computing redundant network connections that can be used when a link or a node fails in a network path. (*Id.* at 6:38-41, 45-64; 1:44-49.) *Finn* relates to communication or power networks and to automatic protection switching in networks. (*Id.* at 1:17-20.) The *Finn* system uses redundancy to provide that in the event that a node fails, the remaining nodes may still be connected. (*Id.* at 6:64—7:1.) The computing of the redundant network connections is carried out by an automatic protection switch (APS) processor. (*Id.* at 15:36-42.) The APS processor in *Finn* calculates the redundant network connections using information and other rules provided to the APS processor. (*Id.*) A predetermined secondary path between is stored in a routing table 16. (*Id.* at 15:46—16:9.) This

predetermined secondary path is used to re-route signals automatically in the event of a failure in a primary path. (*Id.*)

The preplanning of the *Finn* system would not be used with *Azuma*, because such preplanning would obviate the teachings of *Azuma*. In particular, there would be no need for the alternate path computing part 14 of *Azuma*: with a predetermined secondary path being already known, there would be no need to compute topology information and find alternate paths in response to the determination of the location of a failure and the type of the failure. With the *Finn* predetermined secondary paths, the *Azuma* alternate path computing part 14 is unneeded and not useful.

This mismatch between *Azuma* and *Finn* would be readily seen by a person having ordinary skill in the art. Being unable to mesh the teachings of these references, a person having ordinary skill in the art (1) would not have a motivation to combine these references, and (b) would not have a likelihood of success in making a meaningful combined device; in particular, there would not be a likelihood of success in achieving Applicant's claimed invention. For these reasons as well, Applicant submits that the pending claims are allowable under § 103(a).

New claims 118 and 119

New claim 118 depends on claim 1 and includes a limitation of "determining whether a candidate node has sufficient resources to support said virtual path." This limitation is also not present in the cited art.

New claim 119 also depends on claim 1 and includes a limitation of "rejecting a candidate node if the candidate node does not have sufficient resources to support said virtual path." This limitation is also not present in the cited art.

CONCLUSION

Applicant submits that all claims are now in condition for allowance, and an early notice to that effect is earnestly solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is requested to telephone the undersigned.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia, 22313-1450, on July 12, 2006.

Attorney for Applicant — Date of Signature: 2006 July 12

Respectfully submitted,

Cyrus F. Bharucha
Attorney for Applicant
Reg. No. 42,324
Telephone: (512) 439-5097
Facsimile: (512) 439-5099